

Length of body 121 millims. ; height of head $4\frac{1}{3}$, breadth of head (measured between the extremities of the eyes) 9 ; length of prothorax 38, of its neck 9, breadth of supracoxal dilatation $4\frac{1}{3}$; length of abdomen 63, of cerci 13, of antennæ 39, of tegmina 59 ; width of tegmina 10, width of marginal area $2\frac{1}{2}$; length of anterior femora 24, of intermediate femora 26, of posterior femora 37.

The above description has been drawn up from a single specimen of the male preserved in alcohol.

Hab. Sheargaon, in the Kolapur State. Captured by Mr. A. B. Foote, F.G.S., of the Geological Survey of India.

Calcutta, Aug. 14, 1876.

XXXI.—*Shells of the Littoral Zone, and Freshwater and Land Shells, in Jersey.* By E. DUPREY.

It is a well-known fact that the number and variety of shells inhabiting the littoral zone depend much on the extent and nature of the portion left dry by the receding tide. On the coast of Jersey, where the fall of the lowest spring-tides is rather more than 40 feet, and the recess where greatest (at La Rocque) about two miles, species of shells are found at low water which in other places inhabit a depth of several fathoms. This circumstance is particularly favourable for collectors, the more so as all sorts of ground, rocky, stony, gravelly, sandy, and covered with seaweeds, are to be met with on some part or other of the coast.

The following list of Jersey marine shells comprises those only which are found between tide-marks and are accessible to every searcher who can occasionally avail himself of a few hours for a pleasant low-water excursion. Except when otherwise stated, the specimens have been found living.

The nomenclature is that of Jeffreys's 'British Conchology.'

CONCHIFERA.

Anomia ephippium, L. Attached to rocks and stones.

— *patelliformis*, L. On stones.

Ostrea edulis, L.

— —, var. *deformis*, Lam.

Pecten pusio, L. Amongst the "roots" of *Laminaria*.

— *varius*, L. Under loose stones.

— *opercularis*, L. Under stones.

— *maximus*, L. Amongst *Zostera* in St. Aubin's Bay and at La Rocque. One full-grown specimen I found still alive about high-water mark ; a long *Laminaria saccharina* was attached to

- its upper or flat valve, and had been the means of its being dragged by the tide many hundred yards, to the place where it lay. The "roots" of the *Laminaria* sheltered a *Pecten varius* and several small crabs; and a young *Anomia* and small flat *Tunicata* were fixed on the lower valve.
- Mytilus edulis*, L. Rather small and not gregarious. Lines of increase quite distinct.
- *barbatus*, L. Generally of a bluish colour, sometimes purple.
- *ultraticus*, Lam. In pebbly ground these rather thin shells fasten together the surrounding small stones, as if for protection.
- Modiolaria discors*, L.
- Nucula nucleus*, L.
- Pectunculus glycymeris*, L. Common, but rather small, being seldom more than $1\frac{1}{2}$ inch in diameter. At very low tides I have seen this edible species picked up by hundreds. On emerging from the sandy gravel it does not leap like a *Cardium*, but crawls slowly, leaving a small furrow behind. White specimens are rare, also pinkish or mauve-coloured ones.
- Arca lactea*, L. Under stones, and once with *Rissoa lactea* rather deeply buried.
- *tetragona*, Poli.
- Lasæa rubra*, Mont.
- —, var. *pallida*.
- Loripes lacteus*, L.
- Lucina borealis*, L. Small.
- Axinus flexuosus*, Mont. Dead shells only; separate valves rather common in St. Aubin's Bay.
- Diplodonta rotundata*, Mont. One valve only.
- Cardium echinatum*, L. Very fine specimens with spines perfect, in muddy sand in St. Aubin's Bay at low water of equinoctial spring-tides. Like many other bivalves they emerge out of the sand when the tide begins to rise. I believe they come out more numerous when a bright sun warms the surface; but if a heavy shower happen to fall, few, if any, will appear.
- *tuberculatum*, L. Living with the preceding some years ago (Mr. Piquet); lately I have found only dead shells, but fresh-looking.
- *exiguum*, Gmelin.
- *nodosum*, Turt. Gregarious in sand, the white, the yellow, and the pink living together.
- —, var. *rosea*, Lam.
- *edule*, L.
- *norvegicum*, Spengl. Of a light colour at La Rocque in shelly gravel; dark olive in muddy sand in St. Aubin's Bay.
- —, var. *pallida*.
- Astarte triangularis*, Mont. Gregarious in fine shelly gravel at low water of spring-tides.
- Circe minima*, Mont. Valves only.
- Venus exoleta*, L.
- *fasciata*, Da Costa.

- Venus casina*, L. In shelly gravel. The form *reflexa* in muddy sand.
 — *verrucosa*, L.
 — *ovata*, Penn.
- Tapes aureus*, Gmelin. The marbled variety, which is generally grey outside, turns reddish brown in boiling water, while the variety which is white with a dark blotch at the posterior end remains unaltered.
 — *virgineus*, L. In clean shelly gravel specimens are found of a bright pink colour; but in muddy sand, amongst stones, they are dirty white or nearly black, becoming ochreous after a few weeks.
- Tapes pullastra*, Mont.
 — *decussatus*, L.
- Tellina crassa*, Gmelin.
 — —, var. *albida*.
 — *balthica*, L. White, yellow, pink, grey, and other colours.
 — *tenuis*, Da Costa. Dead shells.
 — *squalida*, Pult. Valves only.
 — *donacina*, L.
- Psammobia tellinella*, Lam.
 — *costulata*, Turt. I have seen a single valve picked up at La Rocque.
 — *ferroensis*, Chemn. Dead, but fresh and well preserved.
 — *vespertina*, Chemn.
- Donax politus*, Poli. Gregarious in fine shelly gravel.
- Macra solida*, L. Common in gravel at low water, but small.
 — —, var. *elliptica*, Brown.
 — *subtruncata*, Da Costa.
 — *stultorum*, L.
 — *glauca*, Born. In sandy gravel at La Rocque. Its hiding-place is indicated by a hole larger than that of the *Solen* its neighbour.
- Lutraria elliptica*, Lam. Living with the following, but less common. A specimen 3 inches broad, which I kept in a deep but narrow glass vessel of sea-water, extended its tubes 5 inches out of the shell.
 — *oblonga*, Chemn. Many roundish holes may be seen in the muddy and gravelly sand; but those of the *Lutraria* are revealed by a jet of water when approached. I have never found them two years following in the same place, nor more than 5 or 6 inches beneath the surface.
- Scrobicularia alba*, W. Wood. Dead shells only; separate valves are common at low water.
- Solecurtus candidus*, Renier. Dead only.
- Solen ensis*, L.
 — *siliqua*, L. In gravel.
 — *vagina*, L. In muddy sand.
- Pandora inaequalis*, L. Common in St. Aubin's Bay.
- Thracia papyracea*, Poli. Dead shells.
- Mya truncata*, L.
 — *Binghami*, Turt. Amongst the "roots" of *Laminaria*.
- Pholas candida*, L. One valve only.

SOLENOCONCHIA.

Dentalium tarentinum, Lam.

GASTROPODA.

Chiton fascicularis, L.

— *discrepans*, Brown.

— *cancellatus*, G. B. Sow., Jun.

— *marginatus*, Penn.

— *lavis*, Mont.

— *cinereus*, L.

Patella vulgata, L. I have one with three whitish pearls.

— —, var. *elevata*.

— —, var. *picta*.

— —, var. *intermedia*.

— —, var. *depressa*, Penn.

— —, var. *cœrulea*.

I have seldom found the var. *depressa* out of the water; it remains in rock-pools when the tide is out.

Helcion pellucidum, L. Young and thin specimens are common on the fronds and stalks of *Laminaria*; large and thick adults prefer the base of the plant.

Tectura virginea, Müll.

Emarginula fissura, L.

Fissurella græca, L.

Calyptœa chinensis, L. Often of a brownish colour.

Haliotis tuberculata, L. Not common at low water. Fishermen, to get it for the market, go out in boats to more distant rocks.

Trochus magus, L. The markings are sometimes brown or nearly black, and cover nearly the whole surface. Young specimens are at times white or entirely pink. It is often found crawling in gravel at low water. The height of the shell is variable, and sometimes about equal to the breadth.

— *cinerarius*, L.

— —, var. *variegata*.

— *umbilicatus*, Mont.

— —, var. *decorata*.

— —, var. *agathensis*, Récluz.

— —, var. *pullens*. In this variety the purple rays are wanting, and the colour is a motley ground of light yellow, green, and pinkish grey, with a few not very distinct longitudinal streaks of bluish green.

— *lineatus*, DaCosta. Some specimens have the apex well preserved.

— *striatus*, L. Common on *Zostera*.

— *exasperatus*, Penn. Under stones.

— *zizyphinus*, L.

Phasianella pulla, L.

Lacuna divaricata, Fabr. Small; animal greenish.

— *puteolus*, Turt. Banded specimens are less common than the plain-coloured.

— *pallidula*, DaCosta.

- Littorina obtusata*, L. Of all colours, and sometimes with bands. In a small aquarium I have kept a specimen for some months which has three tentacles and three eyes. The middle tentacle is bifid; and the eye behind it is double or formed of two little black dots adhering to each other; the two other or normal eyes are simple.
- *neritoides*, L.
- *rudis*, Maton. Of all colours, with and without bands.
- —, var. *tenebrosa*, Mont. Living with *Lascea rubra* amongst *Lichina*, and not more than about $\frac{1}{10}$ of an inch long. When kept with *L. rudis* of the same size, it was soon outgrown by the latter.
- *litorea*, L. This edible species is now more rare in Jersey than *Rissoa lactea*.
- Rissoa striatula*, Mont. Under stones, not uncommon.
- *lactea*, Michand. Not uncommon in Jersey in stony ground. I have found it living at Pointe des Pas, Samarès Bay, and La Rocque; its habitat is peculiar—adhering to the under surface of stones which are buried several inches, and often very firmly, in clayey sand. *Rissoa striatula* and *Adeorbis subcarinatus* are also found with it, and rarely *Arca lactea*. It seems difficult to understand how they can live there; for often the stones, although weighing but a few pounds, are difficult to turn over, so tightly are they imbedded.
- *costata*, Adams. Not common.
- *parva*, Da Costa. Abundant.
- —, var. *interrupta*, Adams. Rare.
- *membranacea*, Adams.
- *violacea*, Desm. Two very distinct sizes.
- *costulata*, Alder. Two distinct sizes and three different types:—
- (1) Entirely white. Rare.
 - (2) Brown nearly all over (except a white rib near the mouth), of different shades and forming zigzag streaks.
 - (3) White, with the mouth and longitudinal furrows between the ribs brown. Common.
- *striata*, Adams.
- *scmistriata*, Mont. Rare.
- *cingillus*, Mont.
- —, var. *rupestris*, Forbes.
- Barleeia rubra*, Mont.
- —, var. *unifasciata*, Mont.
- —, var. *pallida*.
- Skenea planorbis*, Fabr. Gregarious in shelly gravel, with *Astarte triangularis*, at La Rocque.
- Homalogyra atomus*, Phil.
- Scalaria communis*, Lam. Living amongst sand and *Zostera*; lower part of the shell often buried in the sand. Coloured bands sometimes absent.
- Ostomia pallida*, Mont. Under stones.
- *acuta*, Jeff. Under stones.

Olostomia unidentata, Mont.

— *lactea*, L.

Natica catena, Da Costa.

— *Alderii*, Forbes.

Adeorbis subcarinatus, Mont. Not uncommon. I have kept living specimens for several weeks, and offer the following description of the animal:—Body white with a pinkish hue, semitransparent, easily containable in the shell: *snout* rather long, extensile, cloven at its extremity, and of a bright red internally: *tentacles* diverging, rather long, extensile, blunt, or even a little club-shaped: upper portion white, lower half pink inside: *eyes* very small, at the outward base and somewhat behind the tentacles, under cover of the shell, and visible only when the animal is twisting itself: *foot* slightly notched in front, with rounded and widened corners, nearly square behind: white, with a pinkish stripe lengthwise along the middle: *gill* comb-like, on the right side of the body, and not always protruded.

It is not timid, and swims on its back under the surface of the water. Some shells are white; but the greater number are of an ochreous colour.

Lamellaria perspicua, L. Rather common in autumn.

Cerithium reticulatum, Da Costa.

— *perversum*, L.

Purpura lupillus, L. White, orange, brown, banded, and various other colours.

Buccinum undatum, L. At low water, and also its egg-cases adhering to stones.

Murex erinaceus, L. Inside of the shell sometimes dark brown.

— *aciculatus*, Lam. Common. The shell is sometimes of a light flesh-colour.

Lachesis minima, Mont.

Nassa reticulata, L. In some specimens the mouth is of a bright green colour.

— *incrassata*, Ström.

Defrancia Leufroyi, Michaud.

— *purpurea*, Mont. Body white, with specks of a more opaque white, and not tinged with purple or brown: *palial tube* grey. Shell purple, sometimes with grey blotches. Length 0.8, breadth 0.33. In smaller specimens, although full-grown, length=0.45.

Pleurotoma rufa, Mont.

— —, var. *lactea*. Dead only.

Cypræa europæa, Mont. Plain specimens are more common than three-spotted ones. It can swim on its back.

Bulla hylatis, L. Rare. Empty shells more common.

Philine aperta, L.

Aplysia punctata, Cuvier.

Pleurobranchus membranaceus, Mont. Two young specimens.

Length of shell 0.6.

— *plumula*, Mont.

Melampus bidentatus, Mont.

CEPHALOPODA.

Loligo vulgaris, Lam. Pens only.

Sepiola Rondeletii, Leach.

Sepia officinalis, L. Shells only.

— *elegans*, De Blainville. Shells only and broken.

— *biserialis*, De Montfort. Imperfect shells.

Octopus vulgaris, Lam. Common. At La Rocque the heaps of empty shells around the dens of the *Octopus* are for the greater part composed of *Pectunculus* open but entire. In stony ground their hiding-places are often indicated by "débris" of the common green crab, on which they appear to feed.

FRESHWATER SHELLS.

CONCHIFERA.

Pisidium fontinale, Drap.

— *pusillum*, Gmelin.

— *nitidum*, Jenyns.

GASTROPODA.

Planorbis lineatus, Walker.

— *nautilus*, L.

— *albus*, Müll.

— *spirorbis*, Müll.

Physa hypnorum, L.

Limnea peregra, Müll.

— *truncatula*, Müll.

— *glabra*, Müll.

— —, var. *elongata*. Apex more blunt than in the typical form; living together.

Ancylus fluviatilis, Müll. More than once I have found young specimens of this slow mollusk adhering to an active flying water-beetle, the *Acilius sulcatus*. Thus carried from one pond to another, it can be rapidly distributed throughout the country.

LAND SHELLS.

Arion ater, L.

— *hortensis*, Fér.

— *flavus*, Müll.

Limax marginatus, Drap.

— *flavus*, L.

— *agrestis*, L.

— *maximus*, L.

Succinea putris, L.

Vitrina pellucida, Müll.

Zonites cellarius, Müll.

— *alliaris*, Müll.

— *nitidulus*, Drap.

— *radiatulus*, Alder.

— *nitidus*, Müll.

— *crystallinus*, Müll.

— *fulvus*, Müll.

Helix aculeata, Müll.

— *aspersa*, Müll.

<i>Helix nemoralis</i> , L. Pink, yellow, plain, or with one or more bands.	<i>Helix pulchella</i> , Müll.
— <i>hispidula</i> , L. Boiling water makes the hairs fall off.	— —, var. <i>costata</i> , Müll.
— <i>revelata</i> , Mich.	<i>Bulimus acutus</i> , Müll.
— <i>pisana</i> , Müll.	— <i>obscurus</i> , Müll.
— <i>virgata</i> , Da Costa. White, dark, and banded.	<i>Pupa umbilicata</i> , Drap.
— <i>caperata</i> , Mont.	— <i>marginata</i> , Drap.
— —, var. <i>ornata</i> , Picard.	<i>Vertigo pygmæa</i> , Drap.
— <i>rotundata</i> , Müll.	— <i>edentula</i> , Drap.
— <i>pygmæa</i> , Drap.	<i>Balia perversa</i> , L.
	<i>Clausilia rugosa</i> , Drap.
	<i>Cochliopa lubrica</i> , Müll.
	<i>Carychium minimum</i> , Müll.

XXXII.—*Additional Remarks on the Classification of the Genera of Chiroptera.* By G. E. DOBSON, M.A., M.B., F.L.S., &c.

SINCE my *Conspectus* of the Suborders, Families, and Genera of Chiroptera was published in the 'Ann. & Mag. Nat. Hist.' for Nov. 1875, the system of classification adopted by me has, among other notices, been especially referred to in Mr. Wallace's 'Geographical Distribution of Animals,' and in a review of my 'Monograph of the Asiatic Chiroptera' which appeared in the last number of this journal. In both instances the writers appear to regard my new families *Emballonuridæ* and *Nycteridæ* as equivalent to *Noctilionidæ*, Gray, and *Megadermata*, Peters, respectively.

As it would necessarily follow, if these opinions were accepted, that zoologists must consider the new names proposed by me additions only to the already much overcrowded list of synonyms, I think it very necessary to point out, to those who may not have time or opportunity to compare my classification with those previously published, the differences which exist between the natural families indicated by me under the names *Emballonuridæ* and *Nycteridæ* and those previously known as *Noctilionidæ*, Gray, and *Megadermata*, Peters, respectively.

In the Table below I have placed, for the purpose of comparison, the names of the genera composing the families *Nycteridæ* and *Emballonuridæ* in parallel columns with those containing the genera of *Megadermata*, *Brachyura* and *Molossi*, Peters, and *Noctilionidæ*, Gray.